

REMARKS

Claims 1, 7, 11, and 13 have been amended. Claims 15-45 have been canceled without prejudice to the underlying subject matter. Claims 1-14 are currently pending in this application.

Claims 7-9 and 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Claims 7 and 13 have been rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Claims 8 and 9 depend from amended claim 7 and claim 14 depends from amended claim 13. Accordingly, claims 7-9 and 13-14 are in a condition for allowance and withdrawal of this objection is respectfully requested.

Claims 1 and 11 stand rejected under 35 U.S.C. § 112, because the term “the photo-generated charge” in lines 3-4 of each claim lacks antecedent basis. Office Action at 2. Claims 1 and 11 have been amended to correct this informality. Therefore, withdrawal of this rejection is respectfully requested.

Claims 1-6, and 10-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant’s admitted prior art (AAPA) in combination with Tsukamoto, U.S. Patent No. 5,047,818 (Tsukamoto). This rejection is respectfully traversed.

The present invention relates to a pixel cell with gate controlled charge storage. Independent claims 1 and 11 each recite a pixel cell comprising, *inter alia*, “a photo-conversion device that generates charge” and “a gate controlled charge storage region that stores the charge under control of a control gate.”

As acknowledged by the Examiner, the AAPA describes a typical pixel cell having an electronic shutter and, thus, fails to teach or suggest “a gate controlled charge storage region that stores the charge under control of a control gate,” as recited by

independent claims 1 and 11. Office Action at 3. The Examiner relies on Tsukamoto to supplement the deficiencies of the AAPA. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to incorporate Tsukamoto's memory cell charge storage region in the AAPA pixel circuit to prevent the bad influences on the transistor. Office Action at 3. Applicant respectfully disagrees.

Tsukamoto relates to a memory device for preventing soft errors. Tsukamoto at col. 1, lines 11-15. According to Tsukamoto, the invention can be carried out without a side effect of bad influences on a read/write transistor of a memory cell. Specifically, Tsukamoto teaches that because Tsukamoto's P+ region is made deep under the N+ region 7 it does not produce bad effects on the read/write transistor. Tsukamoto at col. 3, lines 28-39. Tsukamoto's region 101 is separate from the charge storage capacitor. See Tsukamoto at col. 3, lines 40-44. Accordingly, Tsukamoto's charge storage capacitor does not prevent bad influences on the read/write transistor, or any other transistor. Therefore, one of ordinary skill in the art would not have been motivated to modify the AAPA as suggested by the Examiner. Moreover, there is no teaching or suggestion in either reference that would provide motivation for combining the AAPA with any portion of Tsukamoto's memory cell to achieve the invention as claimed in independent claims 1 and 11.

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." M.P.E.P. § 2143.02. As there is no objective reason to combine the AAPA with Tsukamoto, such a combination would be impermissibly based on hindsight. For at least these reasons, withdrawal of this rejection is respectfully requested.

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In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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